

Claims

1. A surface-mountable high power block upconverter (HP-BUC) comprising:
 - a mixer configured to receive an IF frequency signal and a local oscillator signal and to output an RF frequency signal, said RF frequency signal comprising a frequency in a millimeter-wave or higher band;
 - a filter configured to receive said RF frequency signal and filter unwanted spurious signals which may be present in said RF frequency signal; and
 - a high power amplification device receiving said RF frequency signal and providing a desired signal gain such that no further signal amplification is required to said RF frequency signal prior to transmission in said millimeter-wave or higher band.
2. The HP-BUC of claim 1, wherein said mixer comprises a subharmonic mixer.
3. The HP-BUC of claim 1, further comprising an insert coupled to said high power amplification device.
4. The HP-BUC of claim 3, wherein said insert comprises a material characteristic of high thermal conductivity and thermal expansion properties.
5. The HP-BUC of claim 1, further comprising a chassis and a cover, whereby said chassis and said cover are secured together to substantially encase said HP-BUC.

6. A method for signal upconversion in a high power block upconverter (HP-BUC), said method comprising:

mixing a subharmonic local oscillator signal with an intermediate frequency signal to generate a radio frequency (RF) signal within a millimeter-wave band;

filtering said RF signal of any unwanted spurious signals;

amplifying said RF signal such that no further signal amplification is required to said RF frequency signal prior to transmission in said millimeter-wave band; and

substantially encasing said HP-BUC to make a stand-alone HP-BUC component, whereby said stand-alone HP-BUC component can be surface-mounted to other components.

7. A method for assembling a high power block upconverter (HP-BUC) of the type producing a radio frequency (RF) signal in the millimeter-wave or higher bands, said method comprising:

coupling a subharmonic mixer to receive a local oscillator input and an intermediate frequency (IF) input;

coupling a bandpass filter to an output of said subharmonic mixer;

coupling a power amplification device to an output of said bandpass filter; and

securing a top cover to a bottom chassis such that said HP-BUC is substantially enclosed.